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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,914	04/18/2001	Sam Heidari	VELCP010X1	8857

28436 7590 04/05/2006		**EXAMINER**
IP CREATORS		ZHENG, EVA Y
P. O. BOX 2789		

ART UNIT	PAPER NUMBER
2611	

CUPERTINO, CA 95015

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/837,914	HEIDARI ET AL.
		Examiner	Art Unit
		Eva Yi Zheng	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2006*.

2a)☐ This action is **FINAL.** 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9 and 17* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1.   The request filed on January 12, 2006, for a Request for Continued Examination

(RCE) under 37 CFR 1.114 based on parent Application No. 09/837,914 is acceptable

and a RCE has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

3.   Claims 1, 5, 9 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated

by Czerwiec et al. (US 6,314,102).

a)   Regarding to claim 1, Czerwiec et al. disclose an X-DSL transceiver configured

to couple to a at least one subscriber line to communicate at least one multi-tone

modulated communication channel thereon; and the X-DSL transceiver comprising (as

shown in Fig. 2, 5, and 11):

        a digital signal processor (DSP) configured to couple to the at least one

subscriber line for multi-tone modulation and demodulation of the at least one

communication channel thereon (14a, FRONT-END DSP in Fig. 11), and the DSP

operative during a training phase of the at least one multi-tone modulated

communication channel to determine an available bandwidth on the at least one

subscriber line and to expand or contract a tone spacing of the multi-tone modulation

and demodulation of the at least one communication channel responsive to the

determination to conform with the available bandwidth on the at least one subscriber

line; whereby the tone spacing utilized for modulation and demodulation of the at least

one subscriber line vary at least in part based on a length of the at least one subscriber

line (as shown in Fig.12 tone-spacing is 4.3kHz or larger; Col 19, L48-60).

b)   Regarding to claim 5, Czerwiec et al. disclose the X-DSL transceiver of Claim 1,

wherein the DSP supports modulation and demodulation of the at least one multi-tone

modulated communication channel in a plurality of multi-tone protocols (as shown in

Fig. 10).

c)   Regarding to claim 9, Czerwiec et al. disclose the X-DSL transceiver of Claim 1,

further comprising:

        at least one analog front end (AFE) coupled between the at least one subscriber

line and the DSP and the at least one AFE configured to perform analog-to-digital and

digital-to-analog conversion of the at least one multi-tone modulated communication

channel (as shown in Fig. 10; Col 18, L35-46).

d)   Regarding to claim 17, Czerwiec et al. disclose a method in an X-DSL

transceiver for communicating at least one multi-tone modulated communication

channel across a subscriber line; and the method comprising the acts of:

determining during a training phase of the at least one multi-tone modulated

communication channel an available bandwidth on the at least one subscriber line (as

shown in Fig. 11 and 12);

selecting a tone spacing for each successive set of tones associated with the

modulation and demodulation of the at least one multi-tone modulated communication

channel responsive to the available bandwidth determined in the determining act;

whereby the tone spacing utilized for modulation and demodulation of the at least one

subscriber line varies at least in part based on a length of the at least one subscriber

line (as shown in Fig.12 tone-spacing is 4.3kHz or larger; Col 19, L48-60).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2, 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Czerwiec et al. (US 6,314,102) in view of Rybicki et al. (US 5,742,527), in further

view of Bloy et al. (US 4,695,825).

a)   Regarding to claim 2, Czerwiec et al. disclose an digital-to-analog converter

(DAC) coupled to at least one subscriber line and performing a digital-to-analog

conversion of the at least one multi-tone modulated communication channel at a fixed

sample rate (as shown in Fig. 10; Col 18, L35-46).

Czerwiec et al. disclose all the subject matters above except for the specific

teaching of an interpolator coupling the DSP and DAC, and interval relationship of tone

set.

However, Rybicki et al., in the same field of endeavor teaches an interpolator

(110 in Fig. 4). In addition, Bloy et al. disclose an analog to digital conversion system.

When utilized with DSP system, Bloy et al. states that: "brings about overall cycle times

of markedly reduce interval for enhancing processing rates and increasing bandwidth"

(Col 1, L54-64). This clearly indicates the inverse relationship of the processing interval,

rate and bandwidth. Therefore, it is obvious to one of ordinary skill in art to implement

the interpolator of Rybicki et al. and the teaching of Bloy et al. with the DSP system of

Czerwiec et al. By doing so, provide increasing Nyquist frequency, and eliminating

waste periods during operation of communication in a system.

b)   Regarding to claim 3, Czerwiec et al. disclose an analog-to-digital converter

(ADC) coupled to at least one subscriber line and performing a analog-to-digital

conversion of the at least one multi-tone modulated communication channel at a fixed

sample rate (as shown in Fig. 10; Col 18, L35-46).

Rybicki et al disclose a decimator (205 in Fig. 12) coupling to ADC and to the

DSP.

Czerwiec et al. and Rybicki et al disclose all the subject matters above except for

the specific teaching of interval relationship of tone set.

However, Bloy et al. disclose an analog to digital conversion system. When

utilized with DSP system, Bloy et al. states that: "brings about overall cycle times of

markedly reduce interval for enhancing processing rates and increasing bandwidth" (Col

1, L54-64). This clearly indicates the inverse relationship of the processing interval, rate

and bandwidth. Therefore, it is obvious to one of ordinary skill in art to implement the

decimator of Rybicki et al. and the teaching of Bloy et al. with the DSP system of

Czerwiec et al. By doing so, provide increasing Nyquist frequency, and eliminating

waste periods during operation of communication in a system.

c)   Regarding to claim 7, Czerwiec et al. disclose wherein the at least one subscriber

line comprises a plurality of subscriber lines; the at least one multi-tone modulated

communication channel comprises a plurality of multi-tone modulated communication

channels each associated with a corresponding one of the plurality of subscriber lines

(as shown in Fig. 10).

Rybicki et al disclose a scheduler (inherent as 210 in Fig. 12) coupled to the DSP

to schedule processing therein of the plurality of multi-tone modulated communication

channels based on criteria including associated processing intervals for each of the

plurality of multi-tone modulated communication channels.

Czerwiec et al. and Rybicki et al disclose all the subject matters above except for

the specific teaching of interval of bandwidth in DSP.

However, Bloy et al., in the same field of endeavor, disclose ADC system. Bloy et

al. states that: "brings about overall cycle times of markedly reduce interval for

enhancing processing rates and increasing bandwidth" (Col 1, L54-64). This clearly

indicates the inverse relationship of the processing interval, rate and bandwidth.

Therefore, it is obvious to one of ordinary skill in art to implement the teaching of Bloy et

al. with the DSP system of Czerwiec et al. By doing so, provide increasing Nyquist

frequency, and eliminating waste periods during operation of communication in a

system.

6.   Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Czerwiec et al. (US 6,314,102) in view of Bloy et al. (US 4,695,825).

a)   Regarding to claim 4, Czerwiec et al. disclose wherein the at least one subscriber

line comprises a plurality of subscriber lines; the at least one multi-tone modulated

communication channel comprises a plurality of multi-tone modulated communication

channels each associated with a corresponding one of the plurality of subscriber lines

(as shown in Fig. 10).

        Czerwiec et al. disclose all the subject matters above except for the specific

teaching of interval of bandwidth in DSP.

        However, Bloy et al., in the same field of endeavor, disclose ADC system. Bloy et

al. states that: "brings about overall cycle times of markedly reduce interval for

enhancing processing rates and increasing bandwidth" (Col 1, L54-64). This clearly

indicates the inverse relationship of the processing interval, rate and bandwidth.

Therefore, it is obvious to one of ordinary skill in art to implement the teaching of Bloy et

al. with the DSP system of Czerwiec et al. By doing so, provide increasing Nyquist

frequency, and eliminating waste periods during operation of communication in a

system.

b)   Regarding to claim 6, Czerwiec et al. disclose an digital-to-analog converter

(DAC) and an analog-to-digital converter (ADC) (as shown in Fig. 10; Col 18, L35-46).

Czerwiec et al. disclose all the subject matters above except for the specific

teaching of the sample rate corresponds inversely with respect to the processing

interval selected by the DSP.

However, Bloy et al., in the same field of endeavor, disclose ADC system. Bloy et

al. states that: "brings about overall cycle times of markedly reduce interval for

enhancing processing rates and increasing bandwidth" (Col 1, L54-64). This clearly

indicates the inverse relationship of the processing interval, rate and bandwidth.

Therefore, it is obvious to one of ordinary skill in art to implement the A/D system of

Bloy et al. with the DSP system of Czerwiec et al. By doing so, provide increasing

Nyquist frequency, and eliminating waste periods during operation of communication in

a system.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Eva Y Zheng whose telephone number is 571-272-

3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

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Eva Yi Zheng
Examiner
Art Unit 2611
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March 28, 2006

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER